

Amendment to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of case hardening an article of titanium or a titanium-based alloy, or an article of zirconium or a zirconium-based alloy, comprising treating the article with heat for a period of at least 12 hours at at least one temperature selected from the range of 850°C to 900°C and at a pressure ~~in~~on the order of atmospheric pressure in an oxygen diffusion atmosphere, the atmosphere comprising:
 - a) a carrier gas which does not react chemically with the article in the temperature range, and
 - b) molecular oxygen, wherein a concentration of oxygen in the oxygen diffusion atmosphere is in the range of 10 volumes per million to 400 volumes per million.
2. (previously presented) The method according to claim 1, wherein the oxygen concentration is in the range of 75 to 300 volumes per million.
3. (currently amended) The method according to claim ~~4~~2, wherein the oxygen concentration is in the range of 100 to 200 volumes per million.
4. (currently amended) The method according to claim ~~4~~2, further comprising subjecting the article to further heat treatment at a temperature in the range of 500°C to 900°C in an atmosphere having an oxygen concentration of at least 5000 volumes per million, with the balance being non-reactive carrier gas so as to form a visible surface oxide layer on the article to improve tribological properties of the article.

5. (previously presented) The method accordingly to claim 4, wherein the atmosphere in which the tribiological surface oxide layer is formed contains from 15% to 25% by volume of oxygen and from 75% to 85% by volume of argon.

6. (currently amended) The method accordingly to claim 44, wherein the carrier gas is argon.

7. (canceled)